

REMARKS

Applicants request favorable reconsideration of this application in view of the foregoing amendments and the following remarks. Claims 1-4, 7-15, 17-24, and 26-28 were pending in the application and were rejected in the Office Action. By way of this amendment, Applicants have cancelled claims 13-15, and 17-20, without prejudice or disclaimer. In addition, Applicants have, without adding new matter: (a) amended claims 1, 2, 4, 7, 12, 21, 22, and 27; and (b) added new claims 29-32. Accordingly, claims 1-4, 7-12, 21-24, and 26-30 are respectfully resubmitted for further consideration.

1. Claim Rejections

The Examiner rejected: (a) claims 1, 2, 7-10, 12-14, 18-22, 24, 27, and 28 under 35 U.S.C. § 102(b) as allegedly being anticipated by U.S. Patent No. 5,876,638 (“Sunder”); (b) claims 3, 15, and 23 under 35 U.S.C. § 103(a) as allegedly being obvious when considering Sunder in view of U.S. Patent No. 6,511,051 (“Kessler”); (c) claim 4 under 35 U.S.C. § 103(a) as allegedly being obvious when considering Sunder in view of U.S. Patent No. 5,413,741 (“Buchholz”); and (d) claims 11, 17, and 26 under 35 U.S.C. § 103(a) as allegedly being obvious when considering Sunder in view of Cooling Tower Institute 1993 Annual Meeting (“CTI”). Preliminarily, with respect to claims 13-15, and 17-20, these rejections are now moot due to the cancellation of these claims, without prejudice or disclaimer. In addition, as claims 21-24 and 26-28 have been amended to depend from claim 1, which is the only remaining independent claim, the rejection of these dependent claims will be addressed in conjunction with claim 1.

A. Claims 1-4, 7-12, 21-24, and 26-28

Claim 1 recites a cooling media pack that includes, among other possible things (italic emphasis added):

a plurality of alternating sheets each of which comprises:

a plurality of ridges; and

a plurality of voids,

wherein each sheet has an undulating shape,

wherein the ridges of every other sheet are oriented substantially in a first direction,

wherein the ridges of the adjacent sheets are oriented substantially in a different direction,

wherein each of the ridges comprises a peak and a trough,

wherein the peaks of one sheet are joined to the troughs of a sheet adjacent to it,

wherein the ridges of each of the sheets are oriented at an angle between about 20° and 30°, with respect to the horizontal, and

wherein, the cooling media is configured, by: (a) a ratio of the area occupied by the voids to the surface area of the sheet; and (b) an angle at which the ridges are oriented with respect to the horizontal, to be used in: (i) counter-flow film-fill cooling towers; (ii) counter-flow splash-fill cooling towers; and (iii) cross-flow splash-fill cooling towers.

As hereafter explained, Sunder, Kessler, Buchholz, and CTI (standing alone or in combination) fail to teach or suggest such a cooling media pack.

As detailed in ¶¶ [0044]-[0045] of the instant application, one advantage of the cooling media pack according to the present invention is that the pack is universally configured to be used in both splash-fill (cross-flow and counter-flow designs) and film-fill (counter-flow designs) cooling towers; this feature is above-italicized in claim 1. As a result of this universal design, end users that employ multiple types of cooling towers can purchase (and use) one type of cooling pack material. Further, by purchasing and using only one type of cooling pack material, waste can be reduced and inventory can be more easily maintained.

In contrast to the packing material recited in claim 1, the bi-directional packing material disclosed in Sunder is configured only for use only in counter-flow cooling towers. *See e.g., Abstract; col. 1, lines 13-17; col. 3, lines 28-33, 53-55; claims 15, 19, 36, and 39.* Moreover, Sunder explicitly states that its material can not be used in cross-flow designs. *See* col. 7, lines 51-53. Similarly, the cooling media packs that were tested (and discussed) in CTI are also configured only for counter-flow applications. *See, e.g., p. 1, lines 1-14.* Accordingly, neither Sunder nor CTI teaches or suggests a cooling media pack that is configured for use in both cross-flow and counter-flow cooling towers. Moreover, although Buchholz teaches a countercurrent distillation column (*see, e.g., col. 1, lines 9-18; col. 3, lines 10-12*) and Kessler teaches an ordered column packing (*see, e.g., Abstract and col. 1, lines 6-7*), which are generally configured for use in heat exchange columns, neither Buchholz nor Kessler explicitly teaches or suggests that their cooling pack can be used in both cross-flow and counter-flow cooling towers.

In light of the foregoing, none of Sunder, Kessler, Buchholz and CTI teaches or suggests a cooling media pack that is configured for use in both counter-flow and cross-flow cooling towers. As a result, Sunder, Kessler, Buchholz and/or CTI (standing alone or in combination) can not be used to reject claim 1, or any claim dependent thereon, under 35 U.S.C. §§ 102(b), 103(a). Moreover, as claims 2-4, 7-12, 21-24, and 26-28 depend from claim 1, each of these dependent claims is also allowable over Sunder, Kessler, Buchholz and/or CTI (standing alone or in combination). Accordingly, Applicants respectfully request a withdrawal of the rejections of claims 1-4, 7-12, 21-24, and 26-28 under §§ 102(b), 103(a).

B. Claim 4

In addition to the foregoing, claim 4 is also allowable for at least one additional reason. Specifically, the Examiner asserts that Sunder and Buchholz can be properly combined, under 35 U.S.C. § 103(a), to yield the invention recited in claim 4. For the following reasons, Applicants respectfully disagree.

Sunder does not teach or suggest that there is a problem with the arrangement of the vertical flutes 6 and holes 9. Rather, as set forth in col. 8, lines 6-33, Sunder details that the arrangement of the vertical flutes 6 in combination with the fine vertical grooves 8 and the holes 9 yields beneficial results. Accordingly, one of ordinary skill in the art, upon reading Sunder, would not be motivated to change the orientation of the vertical flutes 6 or the holes 9. Moreover, although Figure 7 of Buchholz shows vertically aligned holes 22, Buchholz does not teach or suggest that such alignment improves the efficiency of its material. Rather, Buchholz, like Sunder, merely says that the holes 22 “facilitate liquid distribution through the packing element 14.” Buchholz at col. 5, lines 8-9. Accordingly, one of ordinary skill in the art would not be motivated to modify Sunder’s holes 9 to resemble Buchholz’s vertically aligned holes 22.

In light of the foregoing, there is no motivation to combine Sunder and Buchholz, under 35 U.S.C. § 103(a), to yield the invention recited in claim 4. Accordingly, claim 4 is allowable over the combination of Sunder and Buchholz. Therefore, the rejection of claim 4 under § 103(a) should also be withdrawn for at least this additional reason.

2. New Claims 29-32

New claim 29 recites the same limitations as claim 1, but broadens the range of the angle of the ridges to between “about 20° and about 50°”, which range is supported by original claim 6. However, as new claim 29, like claim 1, recites that the:

cooling media is configured, by: (a) a ratio of the area occupied by the voids to the surface area of the sheet; and (b) an angle at which the ridges are oriented with respect to the horizontal, to be used in: (i) counter-flow film-fill cooling towers; (ii) counter-flow splash-fill cooling towers; and (iii) cross-flow splash-fill cooling towers[,]

new claim 29 is allowable for the same reasons as claim 1, as previously discussed. In addition, as new claims 30-32 depend from new claim 29, each of these new dependent claims is allowable for at least the same reasons as claim 29, without regard to the other patentable limitations recited therein.

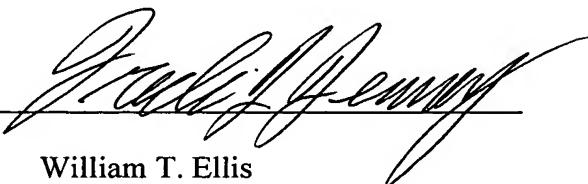
CONCLUSION

For the aforementioned reasons, claims 1-4, 7-12, 21-24, and 26-32 are now in condition for allowance. A Notice of Allowance at an early date is respectfully requested. The Examiner is invited to contact the undersigned if such communication would expedite the prosecution of the application.

Respectfully submitted,

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THE COMMISSIONER IS HEREBY AUTHORIZED TO CHARGE ANY ADDITIONAL FEES WHICH MAY BE REQUIRED REGARDING THIS APPLICATION UNDER 37 C.F.R. §§ 1.16-1.17, OR CREDIT ANY OVERPAYMENT, TO DEPOSIT ACCOUNT NO. 19-0741. SHOULD NO PROPER PAYMENT BE ENCLOSED HEREWITH, AS BY A CHECK BEING IN THE WRONG AMOUNT, UNSIGNED, POST-DATED, OTHERWISE IMPROPER OR INFORMAL OR EVEN ENTIRELY MISSING, THE COMMISSIONER IS AUTHORIZED TO CHARGE THE UNPAID AMOUNT TO DEPOSIT ACCOUNT NO. 19-0741. IF ANY EXTENSIONS OF TIME ARE NEEDED FOR TIMELY ACCEPTANCE OF PAPERS SUBMITTED HEREWITH, APPLICANT HEREBY PETITIONS FOR SUCH EXTENSION UNDER 37 C.F.R. § 1.136 AND AUTHORIZES PAYMENT OF ANY SUCH EXTENSIONS FEES TO DEPOSIT ACCOUNT NO. 19-0741.